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(54) Title: COPOLYMERS AND THEIR USE IN PERSONAL CARE COMPOSITIONS

$$R_{1}-CH=C-C-O-\left(-CH_{\frac{1}{2}}\right)_{n} N_{\frac{1}{2}}^{R_{3}} + R_{4}$$
 (I)

$$R_{6}-CH=C-C-N < R_{9}$$
 (II)

(57) Abstract: The present invention relates to a copolymer derived from the polymerization of a) at least one cationic monomer of formula (I), wherein R<sub>1</sub> is hydrogen or methyl, R<sub>2</sub> is hydrogen or C1-C4alkyl, R3, R4 and R5 are independently from each other hydrogen or C1-C4alkyl, n is a integer from 1 - 5, and Y is a counterion, and b) at least one monomer of formula (II) wherein R<sub>6</sub> signifies hydrogen or methyl, and R7, R8 and R9 signify independently from each other hydrogen or C1-C4alkyl, with the proviso that at least one of the substituents R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub> and R<sub>9</sub> is C<sub>1-4</sub>alkyl and c) optionally at least one cross-linking agent, which contains at least two ethylenically unsaturated moieties, as well as to their use in personal care product and to the personal care products.



| A. CLASSIF<br>IPC 7  | TCATION OF SUBJECT MATTER C08F220/34 C08F220/54 A61K7/06                                      | )   |                       |  |  |  |  |  |  |
|--|---|---|-----------------------|--|--|--|--|--|--|
|  |   |   |                       |  |  |  |  |  |  |
| According to International Patent Classification (IPC) or to both national classification and IPC  |   |   |                       |  |  |  |  |  |  |
| B. FIELDS SEARCHED  Minimum documentation searched (classification system followed by classification symbols)  |   |   |                       |  |  |  |  |  |  |
| IPC 7 COSF   |   |   |                       |  |  |  |  |  |  |
|  |   |   |                       |  |  |  |  |  |  |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched                                  |   |   |                       |  |  |  |  |  |  |
|  |   |   |                       |  |  |  |  |  |  |
| Electronic data base consulted during the International search (name of data base and, where practical, search terms used)                                     |   |   |                       |  |  |  |  |  |  |
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|  |   | •   | <b>1</b>              |  |  |  |  |  |  |
| C. DOCUME  | ENTS CONSIDERED TO BE RELEVANT  |   |                       |  |  |  |  |  |  |
| Category °   | Relevant to claim No.   |   |                       |  |  |  |  |  |  |
| 7/1  | Citation of document, with indication, where appropriate, of the rel                          |   |                       |  |  |  |  |  |  |
| х  | WO 00 39176 A (THE B.F. GOODRICH  | co.)  | . 1–12                |  |  |  |  |  |  |
|  | 6 July 2000 (2000-07-06)  |   | •                     |  |  |  |  |  |  |
|  | claims 1,11,15,47   |   | ,                     |  |  |  |  |  |  |
| Х  | EP 0 372 546 A (KAO CORP.)  |   | 1-12                  |  |  |  |  |  |  |
|  | 13 June 1990 (1990-06-13)   |   |                       |  |  |  |  |  |  |
|  | claims 1,3  |   | ·<br>1                |  |  |  |  |  |  |
| Ιx   | EP 0 045 720 A (CIBA-GEIGY AG)  |   | 1-12                  |  |  |  |  |  |  |
|  | 10 February 1982 (1982-02-10)   |   |                       |  |  |  |  |  |  |
|  | claims 1,12   |   |                       |  |  |  |  |  |  |
| x  | DE 100 61 656 A (NUTRICON   |   | j 1-9                 |  |  |  |  |  |  |
|  | UMWELTSCHUTZTECHNIK GMBH)   |   | ,                     |  |  |  |  |  |  |
|  | 20 June 2002 (2002-06-20)<br>claim 1  |   |                       |  |  |  |  |  |  |
|  |   | •   |                       |  |  |  |  |  |  |
|  |   |   |                       |  |  |  |  |  |  |
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| <u> </u>   |   |   | ,                     |  |  |  |  |  |  |
| Further documents are listed in the continuation of box C.  Patent family members are listed in annex.   |   |   |                       |  |  |  |  |  |  |
| ° Special ca   | ategories of cited documents:   | "T" later document published after the inte | rnational filing date |  |  |  |  |  |  |
| "A" document defining the general state of the art which is not cited to understand the principle or theory understand to be of particular relevance invention |   |   |                       |  |  |  |  |  |  |
|  | document but published on or after the international  | "X" document of particular relevance; the o |                       |  |  |  |  |  |  |
| "L" document which may throw doubts on priority claim(s) or involve an inventive step when the document is taken alone   |   |   |                       |  |  |  |  |  |  |
| citation or other special reason (as specified) cannot be considered to involve an inventive step when the   |   |   |                       |  |  |  |  |  |  |
| other means ments, such combination being obvious to a person skilled  |   |   |                       |  |  |  |  |  |  |
| P docum  | ent published prior to the international filing date but<br>han the priority date claimed     | *&* document member of the same patent      | family                |  |  |  |  |  |  |
| Date of the  | actual completion of the international search   | Date of mailing of the International se     | arch report           |  |  |  |  |  |  |
|  | November 2003   | 13/11/2003                                  | •                     |  |  |  |  |  |  |
|  |   | Authorized officer                          |                       |  |  |  |  |  |  |
| European Patent Office, P.B. 5818 Patentlaan 2   |   |   |                       |  |  |  |  |  |  |
|  | NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fov. (-31-70) 340-3016 | Cauwenberg, C                               | •                     |  |  |  |  |  |  |



International Application No PCT/EP 03/07637

| Patent document dted in search report |   | Publication date |        | Patent family member(s) | Publication<br>date |
|---------------------------------------|---|------------------|--------|-------------------------|---------------------|
| WO 0039176                            | A | 06-07-2000       | US     | 6361768 B1              | 26-03-2002          |
|                                       |   |                  | AU     | 2383500 A               | 31-07-2000          |
|                                       |   |                  | BR     | 9916721 A               | 13-11-2001          |
|                                       |   | •                | CA     | 2356692 A1              | 06-07-2000          |
|                                       |   |                  | CN     | 1334830 T               | 06-02-2002          |
|                                       |   |                  | EP     | 1147138 A1              | 24-10-2001          |
|                                       |   |                  | JP     | 2002533537 T            | 08-10-2002          |
|                                       |   |                  | MO     | 0039176 A1              | 06-07-2000          |
| EP 372546                             | Α | 13-06-1990       | JP     | 1938376 C               | 09-06-1995          |
|                                       |   |                  | JP     | 2180911 A               | 13-07-1990          |
|                                       |   |                  | JP     | 6070104 B               | 07-09-1994          |
|                                       |   |                  | AT     | 124427 T                | 15-07-1995          |
|                                       |   |                  | DE     | 68923253 D1             | 03-08-1995          |
|                                       |   |                  | DE     | 68923253 T2             | 21-12-1995          |
|                                       |   |                  | EP     | 0372546 A2              | 13-06-1990          |
|                                       |   |                  | ES     | 2076195 T3              | 01-11-1995          |
|                                       |   |                  | HK     | 200896 A                | 15-11-1996          |
|                                       |   |                  | PH     | 27392 A                 | 21-06-1993          |
|                                       |   |                  | US     | 5278269 A               | 11-01-1994          |
| EP 45720                              | A | 10-02-1982       | СН     | 645653 A5               | 15-10-1984          |
|                                       |   |                  | BR     | 8104976 A               | 20-04-1982          |
|                                       |   |                  | DE     | 3175381 D1              | 30-10-1986          |
|                                       |   |                  | ΕP     | 0045720 A2              | 10-02-1982          |
|                                       |   |                  | ES     | 8204747 A1              | 16-08-1982          |
|                                       |   |                  | JP     | 57057743 A              | 07-04-1982          |
|                                       |   |                  | US     | 4419344 A               | 06-12-1983          |
|                                       |   |                  | US     | 4460570 A               | 17-07-1984          |
|                                       |   |                  | US     | 4454114 A               | 12-06-1984          |
|                                       |   |                  | US     | 4460568 A               | 17-07-1984          |
|                                       |   |                  | US     | 4460569 A               | 17-07-1984          |
|                                       |   |                  | US     | 4440744 A               | 03-04-1984          |
|                                       |   |                  | US     | 4460567 A               | 17-07-1984          |
|                                       |   |                  | ZA<br> | 8105276 A               | 25-08-1982          |
| DE 10061656                           | Α | 20-06-2002       | DE     | 10061656 A1             | 20-06-2002          |